REMARKS

Reconsideration and allowance are respectfully requested.

Applicant amends the specification to overcome the objection in paragraph 3 of the final action.

Applicant notes with appreciation the indication of allowable subject matter in claims 19, 20, and 25. Claim 20 is rewritten in independent claim format and should now be allowed.

Claims 1-4, 8-13, 17, and 18 remain rejected under 35 USC 102(e) as being anticipated by U.S. Patent Publication 2003/0223508 to Ding et al. This rejection is respectfully traversed.

Applicant's representative appreciates the courtesies extended by the Examiner during the telephone interview conducted on August 12, 2009. During the interview, memory effects for power amplifiers were discussed as described in Ding. But it was pointed out that unlike Ding, the inventor in this case recognized a further problem associated with power amplifiers: rapidly (but slow in comparison to instantaneous signal variations) changing power levels on the input signal will give rise to changes in power amplifier parameters. Internal heating of semiconductor components indirectly causes this. He solved this problem by developing a way to predict these changes quickly and then make appropriate adjustments. In an example embodiment, the inventor invented a pre-distorter that predicts these changes and makes appropriate adjustments using a set of look-up tables in each delay branch, as illustrated in Fig. 8 where the expressions in the brackets "[ ]" may be viewed as "filter coefficients."

Ding's pre-distorter does not disclose or suggest: "means for compensating for changes in at least one predetermined parameter, wherein said parameter represents amplifier temperature," as recited in claim 1. The Examiner relies on Figure 6 and [0041] but neither reference teaches compensating for changes in amplifier temperature in addition to changes in

input signal amplitude. Ding simply generates a predistorted signal based on input signal amplitude. Paragraph [0041] of Ding states "A number of factors may contribute to the presence of a memory effect in power amplifiers, such as junction temperature or capacitance, drain bias decoupling network, reflection from output mismatches, etc. The manner in which the FIG. 3A circuit can be modified to incorporate memory has been described in conjunction with FIG. 3B. Additional examples of predistortion circuits designed to take the memory effect into account will be described with reference to FIGS. 4A, 4B, 5 and 6 below. Before these circuits are described in detail, a behavioral model for the memory effect will be described in order to illustrate the manner in which the memory effect can be compensated for using the predistortion techniques of the invention." (Emphasis added). As can be seen by the underlined text, Ding's predistorter compensates for memory effects—not temperature.

The inventor believes that Ding's statement "A number of factors may contribute to the presence of a memory effect in power amplifiers, such as junction temperature ..." is not correct. Memory effects cannot by themselves be caused by "a junction temperature." They can however, as Ding points out, be caused by components such as capacitors etc. But simply applying a non-linear FIR structure to compensate for memory effects does not take compensate for the influence and effects from temperature varying over time. The amplifier reacts differently depending on the particular input power and the current temperature. On top of memory combating, the FIR structure parameters have to be changed in accordance with the changing temperature and changed characteristics of the amplifier.

Ding does not teach directly compensating for temperature effects using the DPD as in Figs 4a, 4B, 5 and 6 that compensates for memory effects. Ding merely observes that there is a connection between junction temperature and memory effects. But in fact, an amplifier that

shows no memory effects whatsoever still changes in its power amplifier characteristics as a result of changes in temperature. In this case of no memory effects, Ding would not perform any compensation even though compensation is still needed to account for changing temperature. During the interview, it was agreed that amending the independent claims to further emphasize this distinction would likely overcome the current rejection based on Ding. Accordingly, the independent claims now recite that the claimed compensation/compensating for changes in amplifier temperature "is not dependent on memory effects of the amplifier." The inventor realized something more than just memory compensation was needed to account for effects caused by changes in temperature. The anticipation rejection should be withdrawn.

Claims 8 and 17 recite that both temperature and bias are compensated. Paragraph [0041] does not teach this for the reasons explained above.

Regarding claims 6 and 15, the Examiner agrees that Ding does not disclose that the claimed parameter also represents "average predistorter input signal power." The Examiner now identifies a new reference to Leyendecker (USP 5,923,712) as disclosing "average envelope power of parameter for pre-distorter" with cites to the abstract, col. 12, lines 1-1 1, 62-67; col. 13, lines 1-11, 24-40 of Leyendecker. The Examiner asserts that it "would have been obvious to a person of ordinary skill in the art at the time the invention was made to use parameter represent average power as taught by Leyendecker in the circuit of Ding because it can provide proper parameter match and minimize processing time." Applicant disagrees.

Leydenecker uses an averaged (two or more squared signal samples) which "provides a relatively good indication of the trajectory of the instantaneous power or magnitude envelope of the current power or magnitude sample"...."and quantizer 1111 provide the table address for the selection of alternative tables," as outlined in Col 13, lines 28-29 and lines 37-39. Leydenecker

uses sampling, and thus, the term "average signal power" merely means a somewhat more accurate evaluation of the power or magnitude per sample. It is not clear from Leydenecker that the average signal power level as integrated over a longer time could be used to affect the amplifier's characteristics. Leydenecker certainly does not connect average signal power to a changed amplifier characteristic caused by an increased or decreased temperature. In fact, Leydenecker does not even mention temperature dependence.

The application is in condition for allowance. An early notice to that effect is requested.

Respectfully submitted,

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